TECHNICAL MEMORANDUM

I-15 Environmental Study Project; Key No. 9000 Screening Level 2 Evaluation Concepts Screening Process

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Organization

This technical memorandum is organized as follows:

- Overview of Proposed Concept Screening
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- Level 2—Screening Results
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Overview of Proposed Concept Screening

The purpose of this technical memorandum is to present the results of the Level 2 screening evaluation of design concepts. Input from the Idaho Transportation Department (ITD), Federal Highway Administration (FHWA), Bannock Planning Organization (BPO), City of Pocatello, City of Chubbuck, and other project stakeholders aided in the creation and analysis of these concepts. The design concepts include improvements to the local roadway system, modifications of existing interstate access, and providing new interstate access. The Level 2 analysis is applied to the concepts that advanced through the Level 1 fatal flaw screening (January 14, 2005). Level 2 screening refines the remaining concepts and performs a quantifiable review to identify potential positive and negative impacts on traffic operations, the environment, and the community.

Figure 1 depicts the overall screening process.

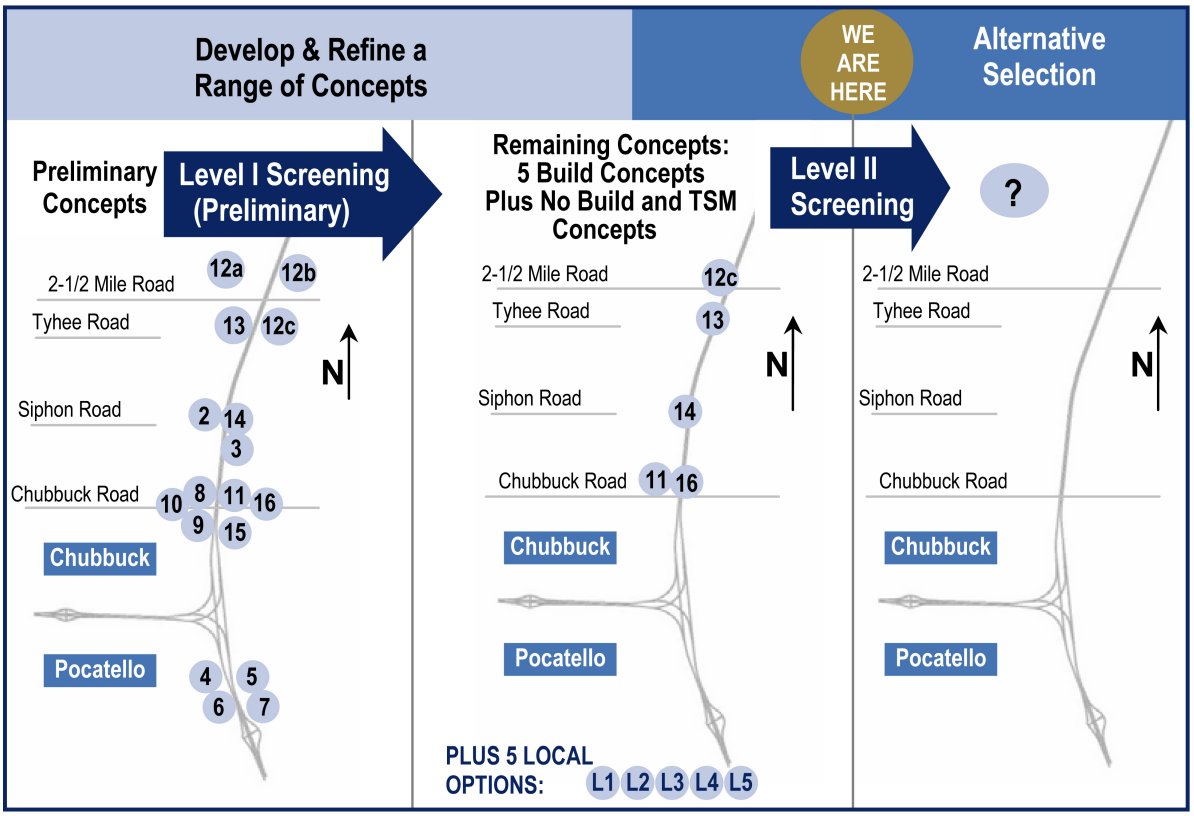

FIGURE 1

FHWA policy regarding interchange justification requires consideration of existing and local street improvements prior to consideration of new or modified access. Before considering new access, it must be proven that these local street concepts do not adequately meet purpose and need; therefore, elements of the purpose and need statement were used as screening criteria.

The project purpose and need statement was finalized on December 10, 2004.

The **purpose** of the proposed action is to provide transportation system solutions to improve user operating conditions in the northern Pocatello/Chubbuck region while enhancing regional transportation system efficiency and safety.

The **need** for the project arises from:

- Limited access to I-15 north of the I-86/I-15 system interchange (nearest I-15 Interchange is located 8 miles north of I-86 at Fort Hall Interchange, Exit 80).
- Existing access to I-15 north of the I-86/I-15 system interchange requires out-of-direction travel, which contributes to congestion on US-91 as identified in Bannock Planning Organization Long Range Transportation Plan (BPO LRTP) 2002-2025.
- The Yellowstone Highway Corridor Plan (YHCP) documents crash rates that are higher than State averages along US-91 between I-86 and Reservation Road. The intersections of

US-91/Chubbuck Road and the system interchange at I-86/I-15 have been identified as areas where accident rates exceed statewide averages.

- BPO LRTP 2002-2025 predicts that existing interstate access points will not accommodate current or projected growth.

Table 1 provides a summary of concepts that meet this purpose and need statements. Graphical summaries of the design concepts can be found in Attachment B. This Level 2 screening will follow the overall decision-making process developed by ITD, FHWA, BPO, City of Pocatello, City of Chubbuck, and other project stakeholders.

Concepts 11 and 16 each enhance the existing WYE interchange configuration, while Concepts 12c, 13, and 14 do not. In order to achieve a direct comparison between these concepts, modified versions of Concepts 12c, 13, and 14 were developed and analyzed. Each of these three modified concepts includes a new northbound I-15 collector-distributor (C-D) system through the WYE interchange area to reduce traffic weaving as described in Concept 16. The C-D system would allow northbound movements to and from I-86 to occur off the I-15 freeway mainline. This modification minimizes conflicts along the northbound I-15 and would enhance safety as ramp connections are made at lower speeds on the adjacent C-D road system. The northbound C-D road will be accessed from I-15 via a dual off-ramp under Concepts 13(M) and 14(M) while Concept 12c(M) operates adequately with a single off-ramp. In each case, the Pocatello Creek northbound on-ramp will be directed onto the C-D road. Traffic directed onto the C-D system will have full access to I-86 and I-15. Modifications, or components of these modifications, may be constructed in their entirety or developed in a staged sequence as travel demand dictates. Attachment B provides concept schematics.

Level 2—Screening Criteria and Assessment Methodology

Screening criteria are developed from the project purpose and need statement, as well as from public and regulatory agency input. The Level 2 screening criteria are grouped into four categories: transportation benefit, impact to built environment, impact to natural environment, and asset to community. Table 2 lists the Level 2 screening criteria by category and describes the measures to be assessed.

The Level 2 screening process was conducted by comparing the individual criteria to the environmental, planning, and transportation-related conditions associated with each concept. Through this process it is expected that recommended concepts will be generated and a preferred alternative will be selected. The preferred alternative, along with the No Build TSM Concept, will be submitted as part of the Concept Report.

After the Level 2 screening is complete and the Environmental Assessment process has begun, preliminary design will commence for the preferred alternative. At this stage, the preferred alternative and the 2030 No Build TSM concept will be carried through the National Environmental Policy Act (NEPA) and Interchange Justification Report (IJR) processes.

TABLE 1
2030 Build Concept Descriptions

Design Concept	Description	Enhancements
2030 No Build TSM	• This concept is carried forward as the baseline comparison to the build option • Generally reflects the existing layout with transportation system management (TSM) improvements as identified by BPO	• Applicable Yellowstone Highway Study design enhancements are incorporated into this Concept
	New Access Concepts	
Concept 11—Chubbuck Road NW quadrant partial cloverleaf interchange	• Reconstruction of Chubbuck Road overpass structures • Construction of one quadrant cloverleaf in northwest corner of Chubbuck Road/I-15 crossing • Construction of a partial diamond interchange on the northbound side of I-15 at Chubbuck Road • Construction of Chubbuck Road exit ramp from I-86/I-15 east to north interchange ramp • Widening of Chubbuck Road to five lanes from Bench Road to Hi-Line Road • Realignment of the I-15 northbound mainline allowing right on and off movements at the existing I-15/I-86 "WYE" interchange	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept • An auxiliary lane connecting the I-15 northbound Pocatello Creek Road on-ramp with the off-ramp to I-86 westbound was added as a further improvement • An auxiliary lane connecting the I-15 southbound Chubbuck on-ramp to the off-ramp to I-86 westbound was added as a further improvement
Concept 12c—2-1/2 Mile Road interchange south of existing 2-1/2 Mile Road overpass with connection to Tyhee Road	• Construction of a full diamond interchange south of the existing overpass • Removal of existing 2-1/2 Mile Road overpass • Connection of 2-1/2 Mile Road with Tyhee Road with a two-lane roadway • Extension of Bench Road from Chubbuck Road to I-15 at 2-1/2 Mile Road interchange	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept
Concept 12c (MOD)—2-1/2 Mile Road interchange south of existing 2-1/2 Mile Road overpass with connection to Tyhee Road	• Same as Concept 12c, with the additions: • Realignment of the I-15 northbound mainline allowing right on and off movements at the existing I-15/I-86 "WYE" interchange • Conversion of existing northbound I-15 mainline to a northbound collector-distributor (C-D) road to accommodate I-86 and Chubbuck Road interchange ramps	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept
Concept 13—Tyhee Road interchange	• Extension of Tyhee Road to I-15 with a two-lane roadway • Construction of a full diamond interchange and overpass • Extension of Bench Road from Chubbuck Road to I-15 at Tyhee Road interchange	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept

TABLE 1
2030 Build Concept Descriptions

Design Concept	Description	Enhancements
Concept 13 (MOD)— Tyhee Road interchange	• Same as Concept 13, with the additions: • Tyhee Road has a five-lane configuration at the ramp terminals • Realignment of the I-15 northbound mainline allowing right on and off movements at the existing I-15/I-86 "WYE" interchange • Conversion of existing northbound I-15 mainline to a northbound C-D road to accommodate I-86 and Chubbuck Road interchange ramps	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept • This concept includes a dual-lane I-15 northbound off-ramp to the C-D road
Concept 14— Siphon Road interchange southern alignment	• Extension of Siphon Road from Hi-Line Road to I-15 with a five-lane roadway • Extension of Bench Road from Chubbuck Road to I-15 at Siphon Road interchange with a three-lane roadway • A new I-15 full diamond interchange connecting to the extension of Siphon Road • Widen Siphon Road from US-91 to Hi-Line Road with at-grade crossing with the Union Pacific Railroad (UPRR) tracks	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept • This concept includes a dual-lane I-15 northbound off-ramp to Siphon Road
Concept 14 (MOD)— Siphon Road interchange southern alignment	• Same as Concept 14, with the additions: • Realignment of the I-15 northbound mainline allowing right on and off movements at the existing I-15/I-86 "WYE" interchange • Conversion of existing northbound I-15 mainline to a northbound C-D road to accommodate I-86 and Chubbuck Road interchange ramps	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept • This concept includes a dual-lane I-15 northbound off-ramp to Siphon Road and a dual-lane northbound off-ramp to the C-D road
Concept 16— Chubbuck Road interchange with northbound and southbound CD lanes	• Reconstruction of Chubbuck Overpass structures • Construction of a partial cloverleaf "AB" interchange at Chubbuck Road • Widening of Chubbuck Road to five lanes from Hi-Line Road to Bench Road • Realignment of the I-15 northbound mainline allowing right on and off movements at the existing I-15/I-86 "WYE" interchange • Conversion of existing northbound I-15 mainline to a northbound C-D road to accommodate I-86 and Chubbuck Road interchange ramps	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept • An auxiliary lane connecting the I-15 southbound Chubbuck on-ramp to the off-ramp to I-86 westbound was added to facilitate traffic operations

TABLE 1
2030 Build Concept Descriptions

Design Concept	Description	Enhancements
Local Improvement Concepts— These five local project elements listed are combined to create the Local Concept		
Local Project Element 1— Widen Hi-Line Road and extend Siphon Road east with overpass to Bench Road extension	• Extension of Siphon Road from Hi-Line Road to Bench Road with an overpass at I-15 • Widen Hi-Line Road from Chubbuck Road to Siphon Road	• Applicable Yellowstone Highway Study design enhancements are incorporated into this concept
Local Project Element 2— Widen Chubbuck Road	• Widen Chubbuck Road from Hi-Line Road to Bench Road • Widen Bench Road from Chubbuck Road to Olympus Drive	
Local Project Element 3— Widen Hi-Line Road and New Tyhee Road—Bench Road alignment including overpass	• Extension of Tyhee Road from Hi-Line Road to Bench Road with an overpass at I-15 • Widen Hi-Line Road from Chubbuck Road to Tyhee Road	
Local Project Element 4— East Frontage Road	• Extension of Fairground Drive north from Chubbuck Road to 2-1/2 Mile Road along the east side of I-15	
Local Project Element 5— West Frontage Road	• New road intersecting with Chubbuck Road extending north to intersect with 2-1/2 Mile Road along the west side of I-15	

TABLE 2
Screening Level 2—Criteria and Descriptions

Criteria	Description
Transportation Benefit	
Interstate Operations	How does the concept impact the operations of the Interstate system?
Mainline Operations	How does the concept impact the mainline operations?
Ramp Operations	How does the concept impact the operations of the associated ramp junctions?
Weaving Operations	Does the concept produce weaving sections on the Interstate and how do these perform?
Local Traffic Operations	How does the concept impact the operations of the local arterial system?
Ramp Terminal Intersection Operations	How does the concept impact the operations of the ramp termini?
Local Intersection Operations	How does the concept impact the operations of the local intersections?
Route Circulation	How well does the system reduce circuitous travel in Chubbuck/Pocatello?
Traffic Safety	Does the concept improve safety at high accident locations?
East/West Arterial Linkage	How well does the concept improve east/west connections across I-15?
Volume Reduction on Existing Interchanges	What is the relative usefulness of a new interchange within the project vicinity? What level of traffic relief is provided to existing interchanges?
Impact to Built Environment	
Economic Disruptions and Displacements	How many commercial and residential properties will be displaced and to what level? Would the concept disrupt any existing neighborhoods or businesses?
Impact on Noise	How will implementation of a concept impact noise levels to residential communities?
Impact on Section 4(f) resources	Would there be any direct impacts on any listed historic buildings, or other Section 4(f) resources?
Environmental Justice	Are there disproportionate impacts to low-income and/or minority populations?
Impact to Natural Environments	
Impact on Critical areas (steep slopes, wetlands, aquifer recharge, streams, etc.)	How will implementation of a concept impact known critical resources?
Impact to Threatened or Endangered Species	Does the concept negatively impact threatened or endangered species?
Hazardous Materials and Waste	Does the concept encroach on property with hazardous materials and/or waste?

TABLE 2
Screening Level 2—Criteria and Descriptions

Criteria	Description
Transportation Benefit	
Interstate Operations	How does the concept impact the operations of the Interstate system?
Asset to Community	
Compatibility with Comprehensive Plans	Is the concept consistent with regional and local plans? How well does the concept support and advance those plans?

Level 2 Screening Results

A detailed description of the criteria rating scales and the screening results are provided in Attachment A. In general, the concepts are scored for each criterion and compared to the 2030 No Build TSM concept. Rating scales from 1 to 5 were developed from the raw data to compare and contrast the concepts. The greatest benefit reflects a score of 5. The least benefit receives a score of 1. No weighting of the scores has been included. The concept with the largest total score is the preferred alternative. Table 3 summarizes the Level 2 screening criteria scores and totals.

TABLE 3
Final Screening Evaluation Summary

Concepts	No Build TSM	11	12c	13	14	16	L1-L5	12c (M)	13 (M)	14 (M)
Transportation Benefits										
Interstate mainline operations	3	4	3	3	1	5	3	5	5	2
Interstate ramp operations	3	5	4	4	1	5	3	5	5	4
Interstate weaving operations	5	1	5	5	5	3	5	5	5	3
Ramp terminal intersection operations	1	5	3	3	5	3	1	3	3	5
Local intersection operations	2	2	1	1	1	1	1	1	1	1
Route circulation	1	4	1	3	5	4	1	1	3	5
Substantive safety	1	3	4	4	5	3	2	4	4	5
East/West arterial linkage	1	1	2	4	4	1	5	2	4	4
Volume reduction on existing interchanges	1	3	2	2	5	2	1	2	2	5
Category Total	**18**	**28**	**25**	**29**	**32**	**27**	**22**	**28**	**32**	**34**

TABLE 3
Final Screening Evaluation Summary

Concepts	No Build TSM	11	12c	13	14	16	L1-L5	12c (M)	13 (M)	14 (M)
Impact to Built Environment										
Economic disruptions	**5**	**1**	**5**	**4**	**5**	**3**	**4**	**5**	**4**	**5**
Displacements	**5**	**1**	**4**	**2**	**3**	**1**	**1**	**4**	**2**	**3**
Impact on Noise	**5**	**2**	**2**	**5**	**5**	**2**	**2**	**2**	**5**	**5**
Impact on Known Section 4(f) Resources	**5**	**4**	**3**	**3**	**2**	**4**	**3**	**3**	**3**	**2**
Impact on Potential Section 4(f) Resources	**5**	**1**	**5**	**5**	**5**	**1**	**1**	**5**	**5**	**5**
Environmental Justice	5	1	5	5	5	1	1	5	5	5
Category Total	**30**	**10**	**24**	**24**	**25**	**12**	**12**	**24**	**24**	**25**
Impact to Natural Environment										
Impact on Critical Areas	5	5	5	5	5	5	5	5	5	5
Impact to Threatened or Endangered Species	5	5	5	5	5	5	5	5	5	5
Hazardous Materials and Waste Sites	5	2	4	4	3	2	2	4	4	3
Category Total	**15**	**12**	**14**	**14**	**13**	**12**	**12**	**14**	**14**	**13**
Asset to Community										
Compatibility with Comprehensive Plans	**1**	**1**	**1**	**4**	**5**	**1**	**5**	**1**	**4**	**5**
Category Total	**1**	**1**	**1**	**4**	**5**	**1**	**5**	**1**	**4**	**5**
Total Category Scoring	64	51	64	71	75	52	51	67	74	77
Overall Ranking	6	8	6	4	2	7	8	5	3	1

Concept 14(M)—Siphon Road Interchange with the I-15 collector-distributor road produces the most favorable overall results and achieves the highest ranking relative to the screening criteria (transportation benefits, impact to built environment, and asset to community). Concept 14—Siphon Road Interchange ranks second. Concept 13(M)—Tyhee Road Interchange with an I-15 C-D road produces the next highest ranking and achieves slightly higher scores than Concept 14 (M) in the criteria of Interstate operations. Although the modified concepts improve each of their related original concepts, substantial benefit can also be achieved without building an I-15 C-D road when compared to the No Build TSM Concept. As a result, the construction of an I-15 C-D road can be phased in when travel demand supports the need for this enhancement.

The Chubbuck Road Interchange alternatives (Concepts 11 and 16) and the Local Project Concept rank low as they do not achieve significant Transportation benefits and result in substantial impact to the built and natural environment, and also rank low in asset to community.

The highest score for interchange location was at Siphon Road followed by Tyhee Road with the C-D mainline modifications and connection to Bench Road. These build alternatives provide the greatest attraction of traffic and, as a result, reduces congestion at existing interchange locations. These benefits are not as evident with an interchange located at Chubbuck Road or at 2-1/2 Mile Road as these locations are either too internal or too far removed from the existing transportation network to substantially improve localized circulation.

ATTACHMENT A

Level 2 Evaluation

Transportation Benefit

T1. Interstate Operations

a) Mainline Operations

Description

This criterion quantifies the 2030 PM peak hour level of service (LOS) for I-15 and I-86 mainline segments and discusses the impacts of the concepts on freeway operations. For this review, LOS D-F is considered below the threshold of acceptable operations. To quantify the operations, the number of linear miles of poorly operating LOS D-F is compared for each concept. For complete freeway and local arterial operational summaries, see Attachment B.

Scales

5—No mainline miles are operating below the acceptable threshold

4—Number of mainline miles operating below the acceptable threshold is less than the No Build TSM

3—Number of mainline miles operating below the acceptable threshold is the same as the No Build TSM

2— Number of mainline miles operating below the acceptable threshold is between zero and 0.5 miles greater than the No Build TSM

1—Number of mainline miles operating below the acceptable threshold is greater than 0.5 miles compared to No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L5	12c(M)	13(M)	14(M)
Number of Miles below threshold LOS D-F	0.5	0.3	0.5	0.5	1.1	0	0.5	0	0	0.6
Score	**3**	**4**	**3**	**3**	**1**	**5**	**3**	**5**	**5**	**2**

Comment

Concepts 16, 12c(M), and 13(M) provide the most improvement to mainline LOS. Each of these concepts removes all below threshold LOS from the mainline. Concept 11 reduces the length of LOS D-F impacts between the Pocatello Creek Interchange and the I-15/I-86 interchange compared to the No Build TSM Concept. Concept 12c, Concept 13, and the Local Concept remain the same as the 2030 No Build TSM Concept. Concepts 14 and 14(M) show an increase in below threshold LOS.

b) Ramp Operations

Description

This criterion quantifies the 2030 PM peak hour LOS for I-15 and I-86 ramp junctions and discusses the impacts of the concepts on freeway operations. The number of ramps operating at LOS A-C and LOS D-F are compared for each concept. To quantify operations, the number of ramp junctions performing at LOS D-F is compared for each concept based on a ratio to the total number of intersections evaluated. For this review, LOS D-F is considered below threshold operations. For complete freeway and local arterial operational summaries, see Attachment B.

Scales

5—No ramp junctions operate below the threshold of acceptable operations

4—Percentage of ramp junctions operating below the acceptable threshold is less than the No Build TSM

3—Percentage of ramp junctions operating below the acceptable threshold is the same as the No Build TSM

2—N/A

1—Percentage of ramp junctions operating below the acceptable threshold is greater than the No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L5	12c(M)	13(M)	14(M)
Total Ramp Junctions	12	16	16	16	16	14	12	15	15	15
Number of Ramps below threshold LOS D-F	2	0	2	2	5	0	2	0	0	1
Percentage of Ramps below threshold LOS D-F	17	0	13	13	31	0	17	0	0	7
Score	**3**	**5**	**4**	**4**	**1**	**5**	**3**	**5**	**5**	**4**

Comment

Concepts 11, 16, 12c(M), and 13(M) experience the most improvement over the No Build TSM Concept, with all ramp junctions operating at LOS A-C. Concepts 12c, 13, and 14(M) experience modest improvement compared to the No Build TSM. Furthermore, none of these seven concepts have any ramps operating below the LOS threshold at their respective proposed interchange locations. The Local Concept remains the same as the No Build TSM Concept. Concept 14 shows an increase percentage in below threshold LOS ramp junctions.

c) Weaving Operations

Description

This criterion quantifies the 2030 PM peak hour LOS for I-15 and I-86 weaving segments and discusses the impacts each of the concepts have on freeway operations. To quantify the

operations, each concept is initially reviewed to determine if there are weaving segments. If so, the number of weaving sections operating at LOS A-C and LOS D-F are compared for each concept. For complete freeway and local arterial operational summaries, see Attachment B.

Scales

5—No weaving sections are added

4—N/A

3—A weaving section with an acceptable LOS A-C threshold is added

2—N/A

1—At least one weaving section below the acceptable LOS threshold is added

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L5	12c(M)	13(M)	14(M)
Number of Weaves with LOS A-C	0	1	0	0	0	1	0	0	0	1
Number of Weaves below threshold LOS D-F	0	1	0	0	0	0	0	0	0	0
Score	**5**	**1**	**5**	**5**	**5**	**3**	**5**	**5**	**5**	**3**

Comment

The No Build TSM Concept does not have any weaving sections on I-86 and I-15. Concepts 12c, 12c(M), 13, 13(M), 14, and the Local Concept do not add any weaving segments. Concept 11 adds two weaving segments compared to the No Build TSM Concept. Concept 14(M) and 16 add one weaving segment. In Concept 11, the southbound segment operates at an acceptable LOS (I-15 southbound between the Chubbuck Road and I-86 interchanges) while the northbound segment operates at below threshold conditions (I-15 northbound between the Pocatello Creek and I-86 interchanges). In Concepts 14(M) and 16, the weaving segments operate at acceptable LOS. The weaving segment in Concept 14(M) occurs northbound between the C-D system on-ramp and the Siphon Rd off-ramp. In Concept 16 it is a southbound weaving segment, occurring between the Chubbuck Road and I-86 interchanges.

T2. Local Arterial Operations

The modified Concepts 12c, 13, and 14 are not described from this point forward in the Transportation section of this document. The modified concepts do not alter any further transportation criteria, and therefore experience the same results as their original counterparts.

a) Ramp Terminal Intersection Operations

Description

A ramp termini analysis is conducted to ensure that the connections between the freeway and local arterials are not negatively impacted. This criterion quantifies the 2030 PM LOS for ramp terminal intersections in the study area and discusses the impacts of the concepts on operations. To quantify operations, the number of intersections performing at LOS D-F is compared for each concept based on a ratio to the total number of intersections evaluated. For this review, LOS D-F is considered below threshold operations. For complete freeway and local arterial operational summaries, see Attachment B.

Scales

5—No ramp terminal intersections operate below threshold conditions

4—N/A

3—Percentage of ramp terminals operating below threshold conditions is improved compared to the No Build TSM

2—N/A

1—No improvement in ramp terminal operations compared to the No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L5	12c(M)	13(M)	14(M)
Total Number of Ramp Terminal Intersections	4	6	6	6	6	6	4	6	6	6
Number of Intersections below threshold LOS D-F	2	0	1	1	0	1	2	1	1	0
Percentage of Intersections below threshold LOS D-F	50	0	17	17	0	17	50	17	17	0
Score	**1**	**5**	**3**	**3**	**5**	**3**	**1**	**3**	**3**	**5**

Comment

Concepts 11 and 14 improve all ramp terminal intersections to LOS A-C. Concepts 12c, 13, and 16 improve the ramp terminal operations by 33 percent because of the operational improvement at the Hwy 91/I-86 westbound ramp. The Local Concept exhibits the same ramp termini operations as the No Build TSM Concept.

b) Local Intersection Operations

Description

Intersection operations analysis is conducted to ensure key intersections within the study area are not negatively impacted with lower LOS. This criterion quantifies the 2030 PM LOS for local intersections in the study area and discusses the impacts of the concepts on arterial operations. To quantify these results, the number of intersections performing at LOS D-F is compared for each concept based on a ratio to the total number of intersections evaluated.

For this review, LOS D-F is considered below threshold operations. For complete freeway and local arterial operational summaries, see Attachment B.

Scales

5—Percentage of intersections operating below the threshold is less than the No Build TSM by more than 15 percent

4—Percentage of intersections operating below the threshold is reduced by 9 to 15 percent compared to the No Build TSM

3—Percentage of intersections operating below the threshold is reduced by 1 to 8 percent compared to No Build TSM

2—Percentage of intersections operating below the threshold is the same as the No Build TSM

1—Percentage of intersections operating below the threshold is greater than the No Build TSM by 4 percent or more

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Total Number of Local Intersections	9	9	9	9	9	9	9	9	9	9
Number of Intersections below threshold LOS D-F	1	1	2	3	4	2	2	2	3	4
Percentage of Intersections below threshold LOS D-F	11	11	22	33	44	22	22	22	33	44
Score	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Comment

Concept 11 performs the same as the No Build TSM Concept while all other concepts show further degradation compared to the No Build TSM Concept. Concepts 13, 14 and the Local Concept would adversely impact isolated intersections on US-91 and East Chubbuck Road because of redistribution of traffic to these areas.

c) Route Circulation

Description

This criterion provides a quantitative assessment of improvements to linkage and travel within the Chubbuck and Pocatello region. Concepts that reduce circuitous travel, and provide efficient movement on the local arterial network and adjacent regional system are considered beneficial. Concepts that create additional circuitous routing would negatively impact connectivity and circulation. To quantify the operations, the linear distance between chosen routes was measured. For this criterion it is assumed that each travel path uses the Interstate system through each respective Concept, excluding the Local Concept. See Attachment D for origin/destination locations and travel paths map. Travel paths are identified as follows:

Paths

- Fort Hall Interchange (A) to Industrial Centroid (C)
- I-86/US-91 Interchange (D) to Industrial Centroid (C)
- Pocatello Creek Interchange (E) to Industrial Centroid (C)
- Pocatello Creek Interchange (E) to US-91/W. Reservation Road (B)
- Fort Hall Interchange (A) to US-91/Reservation (B)

Scales

5—Greater than 8.0 miles travel reduction compared to the No Build TSM

4—A 6.0 to 7.9 mile travel reduction compared to the No Build TSM

3—A 4.0 to 5.9 mile travel reduction compared to the No Build TSM

2—A 2.0 to 3.9 mile travel reduction compared to the No Build TSM

1—Within 2.0 miles of the No Build TSM total miles traveled

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Travel Paths in miles:										
Fort Hall Interchange to Industrial Centroid	12.0	8.7	8.1	8.2	7.2	8.7	12.0	8.1	8.2	7.2
I-86/US-91 Interchange to Industrial Centroid	3.0	2.8	7.5	6.4	3.3	3.1	3.0	7.5	6.4	3.3
Pocatello Creek Interchange to Industrial Centroid	5.4	3.2	7.2	6.1	3.0	3.1	5.4	7.2	6.1	3.0
Pocatello Creek Interchange to US-91/Reservation	5.9	6.0	6.9	6.1	5.8	6.3	5.9	6.9	6.1	5.8
Fort Hall Interchange to US-91/Reservation	12.4	11.5	7.6	7.9	9.8	11.5	12.4	7.6	7.9	9.8
Total Miles	**38.7**	**32.2**	**37.3**	**34.7**	**29.1**	**32.7**	**38.7**	**37.3**	**34.7**	**29.1**
Score	**1**	**4**	**1**	**3**	**5**	**4**	**1**	**1**	**3**	**5**

Comment

Concept 14 reduces travel distance the most compared to the No Build TSM Concept with a decrease of 9.6 miles in travel distance. Concepts 11 and 16 also show significant improvement with reductions of 6.5 miles and 6.0 miles, respectively. Concept 13 has a moderate improvement with a 4.0-mile reduction in travel distance. Concept 12c has an improvement of less than 2.0 miles. The Local Concept does not have any change in travel distance compared to the No Build TSM condition.

T3. Safety

Substantive Safety

Description

Substantive safety is the expected crash frequency and severity for a highway or roadway.[1] The criteria will be applied to compare the anticipated substantive safety for each of the concepts against the No Build TSM Concept. In this analysis, the volume increase/reduction at previously identified high accident areas for each concept will be used for comparison to the No Build TSM Concept. A reduction in traffic volumes at these specific areas can lead to reduced vehicular conflicts and result in safety improvements. The two locations to be evaluated in this regard include the I-15/I-86 system interchange and the US-91 and Chubbuck Road intersection.

Scales

5—Very significant decrease in traffic volume (>2,000 veh/hr) compared to the No Build TSM

4—Significant decrease in traffic volume (>1,000 veh/hr) compared to the No Build TSM

3—Moderate decrease in traffic volume (> 500 veh/hr) compared to the No Build TSM

2—Slight decrease in traffic volume (< 500 veh/hr) compared to the No Build TSM

1—Same traffic volume as the No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Volume reduction at I-15/I-86 interchange (veh/hr)	0	485	550	695	1,060	425	85	550	695	1,060
Volume reduction at US-91/Chubbuck Rd intersection (veh/hr)	0	275	525	615	1,015	195	145	525	615	1,015
Total (veh/hr)	**0**	**760**	**1,075**	**1,310**	**2,075**	**620**	**230**	**1,075**	**1,310**	**2,075**
Score	**1**	**3**	**4**	**4**	**5**	**3**	**2**	**4**	**4**	**5**

Comment

Concepts 12c, 13, and 14 and their modified counterparts experience the highest reduction in volume at these two locations, with Concept 14 experiencing the most significant reduction. A higher reduction in traffic volume is seen at the US-91 and Chubbuck Road intersection for these concepts because of the new interchange location north of Chubbuck Road. Concepts 11 and 16 exhibit less improvement because of their direct access to I-15 via Chubbuck Road. The Local Concept experiences the least reduction because it is very similar in characteristic to the No Build TSM Concept and adds no new access to the freeway. The reduction of trips at the I-86/I-15 interchange occurs because of direct

[1] Ezra Hauer, ITE Traffic Safety Toolbox Introduction, 1999.

accessibility to I-15 north of the "WYE" Interchange provided by each build concept (excluding the Local Concept). Concept 14 has the most reduction of trips and is because of higher demand at the new northern interchange compared to the other concepts. Many of these trips use local arterials to access I-15 and avoid I-86 completely. Concepts 12c and 13 experience this same phenomenon to a slightly lesser extent, while Concepts 11 and 16 have the least amount of traffic reduction at the "WYE" because of its immediate proximity. The Local Concept is successful in removing a modest amount of trips because of a new east-west crossing, but does not attract many trips away from the "WYE" because no new access is provided.

T4. East/West Arterial Linkage

Connections across I-15

An important aspect of this project is to improve the east/west connectivity across I-15. This criterion quantifies the total number of east/west connections for each concept. The No Build TSM Concept has three existing east/west linkages: 2-1/2 mile overpass, Chubbuck overpass, and Pocatello Creek interchange.

Scales

5—Two east-west connections are added compared to the No Build TSM

4—One east-west connection is added compared to the No Build TSM

3—N/A

2—No crossings are added, but additional connectivity between arterials is provided

1—No additional east-west connections are added compared to the No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Total Connections	3	3	3	4	4	3	5	3	4	4
Score	**1**	**1**	**2**	**4**	**4**	**1**	**5**	**2**	**4**	**4**

Comment

Concepts 11 and 16 do not add any new east/west connections across I-15. Concept 12c does not add a new crossing, but does create new linkage between the east and west by connecting the 2-1/2 mile crossing to Chubbuck Road/Bench Road. Concepts 13 and 14 add a new crossing at Tyhee Road and Siphon Road, respectively, with connection to Chubbuck Road/Bench Road. The Local Concept adds two east-west connections, one at Siphon Road and one at Tyhee Road. Attachment B provides a graphical depiction of the design layouts.

T5. Volume Reduction on Existing Interchanges

Volume Reduction on Existing Ramps During the PM Peak Hour

Description

This criterion evaluates each concept based on its ability to relieve congestion on the existing interchanges at I-86/US-91 and I-15/Pocatello Creek Road compared to Baseline Concept. This criterion is quantified by totaling the reduction in traffic volume at these two interchanges during the PM Peak Hour.

Scales

5—1160 veh/hr or greater reduction in traffic volume compared to the No Build TSM

4—870 to 1149 veh/hr reduction in traffic volume compared to the No Build TSM

3—580 to 896 veh/hr reduction in traffic volume compared to the No Build TSM

2—290 to 579 veh/hr reduction in traffic volume compared to the No Build TSM

1—0 to 289 veh/hr reduction in traffic volume compared to the No Build TSM

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Total Vehicles on Existing Ramps in 2030 (Veh/Hr)	6,645	5,870	6,180	6,205	5,450	6,075	6,615	6,180	6,205	5,450
Total Reduction at Existing Interchanges (Veh/Hr)	0	775	465	440	1,195	570	30	465	440	1,195
Score	**1**	**3**	**2**	**2**	**5**	**2**	**1**	**2**	**2**	**5**

Comment

Concept 14 has the highest reduction in trips using the I-86/US-91 and the I-15/Pocatello Creek Road Interchanges during the PM peak hour. This concept attracts the highest number of trips to the new Siphon Interchange thereby reducing volumes at the two existing interchanges. Concept 11 experiences a reduction of 775 while Concepts 12c, 13 and 16 experience less of a reduction with 465, 440 and 570 veh/hr, respectively. The Local Concept experiences a negligible reduction in trips compared to the No Build TSM.

Impacts to Built Environment

The following is based from the Preliminary Environmental Review technical memorandum which included an administrative review of existing information and field reconnaissance from public roads in the area.

B1. Economic Disruption and Displacements

Description

This criterion evaluates each concept's impact to commercial properties. Impacts were determined by assuming a 100-foot Right-of-Way (ROW) for five-lane principle arterials, 75-foot ROW on local two-lane roads, and 100-foot ROW for five lanes on local roads at each interchange location. If a building was within this assumed ROW, it was counted as a potential displacement. Determinations were made based on a windshield survey and by direct aerial photography measurements.

Scales

5—0 to 1 potential displacement

4—1 to 2 potential displacements

3—2 to 3 potential displacements

2—3 to 4 potential displacements

1—More than 4 potential displacements

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Business full/partial relocations	0	5	0	1	0	3	5	0	1	0
Score	**5**	**1**	**5**	**4**	**5**	**3**	**4**	**5**	**4**	**5**

Comment

Split widening of Chubbuck Road in Concept 11 would displace the Highland Substation, a telecommunications tower, a drinking water storage facility, and two small roadside businesses. These displacements might be mitigated in final design by widening north of the existing roadway. Concept 13 would displace 1 small business. Concept 16 and the Local Concept would displace two small roadside businesses and a drinking water storage facility. No economic displacements are known to be associated with the No Build TSM Concept, Concept 12c, or Concept 14.

B2. Potential Residential Displacements

Description

This evaluation assesses the number of potential residential properties that may be displaced by each individual concept. A potential displacement occurs when a structure must be removed to accommodate ROW, impacts related to safety, or other parcel impacts. There is a higher potential for displacements along Chubbuck Road because of existing residential development.

Relocation impacts are the most evident changes to the built environment. Impacts were determined by assuming a 100-foot ROW for five-lane principle arterials, 75-foot ROW on

local two-lane roads, and 100-foot ROW for five lanes on local roads at each interchange location. Determinations were made based on a windshield survey and by direct aerial photography measurements.

Scales

5—0 potential displacements

4—1 to 2 potential displacements

3—2 to 4 potential displacements

2—4 to 6 potential displacements

1—More than 6 potential displacements

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Potential Residential Displacements	0	23	2	6	4	23	26	2	6	4
Score	**5**	**1**	**4**	**2**	**3**	**1**	**1**	**4**	**2**	**3**

Comment

Concept 11, Concept 16 and the Local Concept will each have greater than 23 potential residential displacements along Chubbuck Road, including new houses built in the Hartland Estates subdivision near the I-15 overpass. Future development in Hartland Estates is continuing and development on the north side of Chubbuck is not included in this estimate. Concept 12c will have two potential displacements, Concept 13 will have six potential displacements. Concept 14 will have four potential displacements. Mitigation measures will be implemented during the design process to reduce the number of potential displacements.

B3. Impact on Noise

Description

This criterion determines the number of potential noise-sensitive receptors. No noise modeling was completed for this review. The number of receptors is not indicative of the noise impacts. Therefore, this screening is not projecting the degree of effects. This is a comparative analysis of how many potential noise receptors would be within 100 feet of the proposed ROW. For this evaluation, residences and commercial properties within 100 feet of the proposed ROW boundary were counted. Because of the lower speed limits that will be on the new and widened roadway segments, a 100-foot distance was selected in order to capture only the first row of houses along the streets. Distances were measured using scalable aerial photography rectified with surveyed coordinates in the project area.

Scales

5—0 to 1 sensitive noise receptors

4—2 to 3 sensitive noise receptors

3—4 to 6 sensitive noise receptors

2—7 to 10 sensitive noise receptors

1—More than 10 sensitive noise receptors

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L5	12c(M)	13(M)	14(M)
Approximate number of receptors	0	9	3	1	1	9	10	3	1	1
Score	**5**	**2**	**2**	**5**	**5**	**2**	**2**	**2**	**5**	**5**

B4. Impact on Known Section 4(f) Resources

Description

This criterion measures minor use or direct negative impacts to known parks, wildlife areas, or historic structures, or other recognized Section 4(f) resources. A search of State Historic Preservation Office (SHPO) records was performed of the project area to identify National Register of Historic Places (NRHP)-registered and eligible historic properties. Parks and protected wildlife areas were identified by a windshield survey and telephone discussions with the City of Chubbuck. Sites identified within the project area include the UPRR line, the Fort Hall Canal, Bistline City Park, and the Nina Custer historic house.

Scales

5—No impacts on Section 4(f) resources

4—Potential for a minor use impact of one Section 4(f) resource

3—Potential for two minor use impacts or one direct impact on a Section 4(f) resource,

2—Potential for three minor use impacts or two direct impacts on Section 4(f) resources

1—Potential direct impact on 3 or more Section 4(f) resources

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Minor Use Impacts to Known Section 4(f) Resources	0	1	2	2	3	1	2	2	2	3
Score	**5**	**4**	**3**	**3**	**2**	**4**	**3**	**3**	**3**	**2**

Comment

Concepts 11 and 16 may have minor use of Bistline Park because of widening of Chubbuck Road. Concepts 12c, 13, and 14 each will have minor use with crossings over the UPRR and Fort Hall Main Canal. Concept 14 may have a minor use of the Nina Custer historic house.

Some of these minor use impacts could be mitigated through minimal alignment adjustments if necessary.

B5. Impact on Potential Section 4(f) Resources

Description

This criterion totals the number of potential Section 4(f) sites or properties impacted. Old quad maps and aerial photographs were used to identify existing structures in the project area that may be eligible as historic structures. Eligible historic resources qualify as Section 4(f) resources.

Scales

5—No potential Section 4(f) resource impacted

4—One potential Section 4(f) resource impacted

3—Two potential Section 4(f) resources impacted

2—Three potential Section 4(f) resources impacted

1—Four or more potential Section 4(f) resources impacted

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Potential Section 4(f) Resources	0	9	0	0	0	9	9	0	0	0
Score	**5**	**1**	**5**	**5**	**5**	**1**	**1**	**5**	**5**	**5**

Comment

Up to nine potential structures along Chubbuck Road must be evaluated to determine whether they are significant historic resources and eligible as Section 4(f) resources. Concept 11, Concept 16, and the Local Concept could displace these structures. The other concepts appear to avoid potential Section 4(f) resources. The potential to avoid these resources may exist with further design modifications.

B6. Environmental Justice

Description

This criterion evaluates the potential for negative impacts to a disproportionate number of persons of minority or poverty status as defined by the U.S. Census Bureau. No census data has been analyzed at this time; however, a windshield survey was performed to identify communities or neighborhoods within the project area that may have concentrations of low-income and minority individuals. The windshield survey identified economically depressed areas, including mobile home parks. The most common minority groups in Idaho are Hispanic/Mexican and Native American descendents. The windshield survey also attempted to identify communities with high concentrations of these ethnic groups by

observations. During this stage of concept evaluation, avoidance options were not considered.

Scales

5—Little to no impacts on Environmental Justice populations

1—Potential disproportionate impacts on Environmental Justice populations.

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Score	5	1	5	5	5	1	1	5	5	5

Comment

Mobile Manor is a high-density residential neighborhood that provides rental space for manufactured and mobile homes. It is located at the southwest corner of Chubbuck Road and Hi-Line Road.

A small mobile home park is on the southwest corner of the intersection of US-91 and Siphon Road. At this time, this site is not considered because it is outside the project limits. If the Siphon Road alternative were chosen this intersection would most likely require modifications to accommodate the changes in traffic patterns. Minor impacts would be assumed, not requiring residential displacement.

Concept 11, Concept 16, and the Local Concept will widen Chubbuck Road and may disrupt Mobile Manor, thereby constituting a potential Environmental Justice issue.

Impact to Natural Environment

N1. Impact on Critical Areas

Description

This criterion assesses impacts of each concept to known critical resources (potential erosion areas, wetlands, canals, waters of the U.S., aquifer recharge, etc.).

Scales

5—Little to no potential impact on sensitive/critical areas

1—Most potential to impact on sensitive/critical areas

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Score	5	5	5	5	5	5	5	5	5	5

Comment

The Fort Hall Main Canal is within the project area. The canal is considered waters of the U.S. and therefore is considered jurisdictional. The National Wetland Inventory Map shows several possible wetlands along the canal. These possible wetlands will not be impacted by the concepts because of bridging of the canal. No other critical areas are known.

N2. Impact to Threatened or Endangered Species

Description

This criterion evaluates impacts to threatened or endangered species.

Scales

5—Little to no potential impact to threatened and endangered species or their critical habitat

1—Most potential to impact threatened and endangered species or their critical habitat

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Score	5	5	5	5	5	5	5	5	5	5

Comment

It was determined that there are no threatened or endangered species or their critical habitat within or near the project area.

N3. Hazardous Materials and Waste Sites

Description

This criterion determines whether a concept encroaches upon a property with hazardous waste or materials. Data sources included sites listed on the EPA-Envirofacts Warehouse website, Idaho Department of Environmental Quality Active Site Files, and IDEQ underground storage tanks (UST) and Leaking Underground Storage Tanks (LUST) lists. There are no Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or National Priority List Sites (NLP) known in the project limits. There are 22 Resource Conservation and Recovery Act (RCRA) sites within the project area that either produce, store, or dispose of hazardous materials. Most occur along US-91 and Chubbuck Road. There are also 22 known underground storage tanks (USTs). The scale is based on the potential to come in contact with hazardous material site locations, even though there may be the potential to avoid them with further design development.

Scales

5—No potential to encroach on hazardous or risk sites

4—Potential encroachments on up to three hazardous or risk sites

3—Potential encroachments on up to five hazardous or risk sites

2—Potential encroachments on up to seven hazardous or risk sites

1—Potential encroachments on more than seven hazardous or risk sites

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Potential Encroachments	0	6	1	3	5	6	6	1	3	5
Score	**5**	**2**	**4**	**4**	**3**	**2**	**2**	**4**	**4**	**3**

Comment

Only one LUST is listed in the project limits; however, it has been repaired and is not expected to affect this project.

Asset to Community

C1. Compatibility with Comprehensive Plans

Description

This criterion determines if the concepts promote compatibly with the comprehensive plans of the City of Chubbuck, City of Pocatello, and Bannock County. This project area is located in the approved comprehensive plan of Chubbuck and Bannock County. City of Pocatello approved comprehensive plan is located south of Chubbuck Road east of I-15. Criterion sub-elements of the comprehensive plans include:

- Promote compatible expansion of urban services
- Compatible with future land use
- Compatible with growth policies
- Compatible with nearby land uses
- Preservation of agriculture, open spaces, and natural sensitive areas

Scales

5—High potential to promote City and County goals

4—Moderate potential to promote City and County goals

3—Some potential to promote City and County goals

2—No potential to promote City and County goals

1—Incompatible to City and County goals

Results

Criteria	No Build TSM	11	12c	13	14	16	L1-L-5	12c(M)	13(M)	14(M)
Compatible with the Cities and County Comprehensive Plans	no	no	no	yes	yes	no	yes	no	yes	yes
Promote compatible expansion of urban services into the future impact area	no	no	no	partial	yes	no	yes	no	partial	yes
Score	**1**	**1**	**1**	**4**	**5**	**1**	**5**	**1**	**4**	**5**

Comment

Concepts 13, 14, and the local concept are compatible with the Cities' and County's comprehensive plans. The City of Chubbuck Comprehensive Plan anticipates an intersection at Siphon Road with I-15 and has planned growth along the Siphon Road corridor.